MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 3, 2018/2019

EME4216 – QUALITY MANAGEMENT

(ME)

30 MAY 2019
9.00 a.m. - 11.00 a.m.
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This Question paper consists of 5 pages with 4 Questions only.

2. Attempt **ALL** questions. All questions carry equal marks and the distribution of the marks for each question is given.

3. Please write all your answers in the Answer Booklet provided.

QUESTION 1

(a) The concept of quality management is being adopted globally and continues to be refined to support organizations in facing increasing competition in the global marketplace.

Describe **FOUR** quality management characteristics that organizations should approach and adopt in order to prepare themselves for future competitiveness.

[4 x 2 marks]

(b) World-class organizations compete effectively in the global marketplace by focusing on areas such as customer service, innovation and team-based approach to work.

Discuss the **FIVE** strategies that world-class manufacturers adopt to consistently provide superior value for customers.

[5 x 1 marks]

(c) Establishing a quality culture involves specific planning and activities for every business or department. It is a challenging undertaking for an organization to establish a quality culture. It is even more challenging for an organization to maintain a quality culture over time. In order to maintain a quality culture, an organization must foster some critical behaviors. Discuss any **FOUR** of these critical behaviors.

[12 marks]

Continued ...

QUESTION 2

(a) John, the manager of the printed-circuit-board-assembly line, feel overwhelmed by the number of defective units the factory has produced. As part of methodology in identifying the major source of the problem, data in Table Q2 (a) are collected. Based on the data given, suggest a quality tool and draw a conclusion out of it. Show all the workings.

[6 marks]

Table Q2 (a) Data collected for the past 24 hours.

Defect	Number of defect occurrences
Components not adhering	143
Excess adhesive	71
Misplaced transistors	601
Defective board dimension	145
Mounting holes improperly positioned	12
Circuitry problems on final test	92
Wrong components	212

(b) Twelve samples, each containing five parts, were taken from a process that produces steel rods. The length of each rod in the samples was determined. The results were tabulated and sample means and ranges were computed as in Table Q2 i). Based on the data given in Table Q2 (b)(i) and Table Q2 (b)(ii), answer the following questions:

Table Q2 (b)(i)

Sample	Sample Mean (in.)	Range (in.)
1	10.002	0.011
2	10.002	0.014
3	9.991	0.007
4	10.006	0.022
5	9.997	0.013
6	9.999	0.012
7	10.001	0.008
8	10.005	0.013
9	9.995	0.004
10	10.001	0.011
11	10.001	0.014
12	10.006	0.009

QUESTION 2 (continue next page)

Continued ...

QUESTION 2 (continued)

Table Q2 (b)(ii)

n	Factor for $\overline{X}$ chart A_2	Factors for R chart D_3	D_4
2	1.88	0.00	3.27
3	1.02	0.00	2.57
4	0.73	0.00	2.28
5	0.58	0.00	2.11
6	0.48	0.00	2.00
7	0.42	0.08	1.92
8	0.37	0.14	1.86

i. Determine the upper and lower control limits and the overall means for $\overline{X}$ - chart and R chart.

[10 marks]

ii. Draw the charts and plot the values of the sample means and ranges.

[4 marks]

iii. Do the data indicate a process that is in control?

[2 marks]

iv. Explain, with at least two examples, what might cause a process to be out of control.

[3 marks]

Continued ...

QUESTION 3

(a) In the discussion of total quality management, problems can be separated into two main groups. Discuss the differences between these two groups.

[7 marks]

(b) Problem solving in a total quality setting is a way to make continual improvements in the workplace and its products or services. In total quality jargon, a problem is solved only when its recurrence has become impossible or significantly less probable. The *PDCA* (*Plan–Do–Check–Adjust*) cycle is one of the models for solving problems in ways that simultaneously lead to workplace or product improvements.

Assume you have been tasked to solve a problem in a manufacturing company, analyze and discuss the step-by-step problem-solving activities in the *PDCA* cycle.

[12 marks]

(c) Problem solving and decision making are fundamental to total quality. Good decisions and problem solutions will decrease the number of problems that occur. Outline and discuss **TWO** ways to evaluate decisions.

[6 marks]

QUESTION 4

(a) For an organization to make continual improvements, it needs to be structured effectively. In fact, the total quality philosophy emphasizes that the process, people and product factors must be continually improved.

Assess and evaluate the **SEVEN** standard process improvement strategies that can be used to improve processes on a continual basis.

[7 x 3 marks]

(b) Continual Improvement strategies are essential to the manufacturing industry especially when facing the challenges and demands of organizational excellence. Assess the manufacturing improvement strategies of **stockless production** and **reduced setup times** to evaluate the differences.

[2 + 2 marks]

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